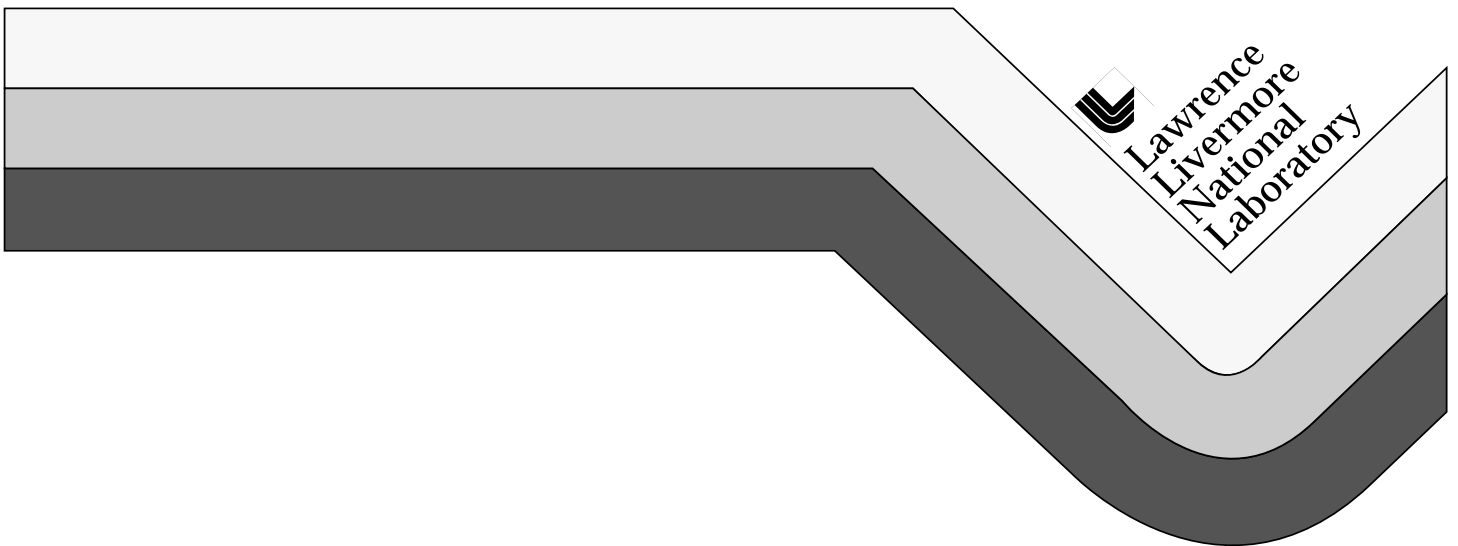


**ES&H Review Processes  
at the  
Lawrence Livermore National Laboratory**

ES&H Working Group

April 1997



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Approved by the ES&H Working Group  
April 29, 1997

A handwritten signature in dark ink, reading "Robert W. Kuckuck", is written over a horizontal line.

Robert Kuckuck  
Deputy Director for Operations



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## **Executive Summary**

The purpose of this document is twofold: (1) to describe the Laboratory's environment, safety and health (ES&H) review processes, including the compliance assessment program and (2) to document the type of reviews and assessments conducted.

The Laboratory evaluates its ES&H Program performance on an on-going basis. This document describes the Laboratory's seven-level assessment process, from the contractual level to the individual employee level.

The Laboratory strives to conduct assessments that are both effective in evaluating its ES & H program and efficient in its use of resources. This is achieved by clearly defining responsibilities, utilizing appropriate levels of formality, and using staff with relevant training for review activities.

LLNL operations and facilities are assessed both formally and informally by Laboratory management, Laboratory ES&H teams and disciplines, the Department of Energy (DOE), and external regulators.

- ES&H teams and disciplines assess work areas through their Action Plan "tasks" and their daily support of the Laboratory organizations.
- Organizational management and staff review operating and facility safety procedures and participate in formal and informal assessments.
- Directorate staff conduct formal and informal self-assessments.
- The Director's Office evaluates the ES&H program and the review processes through the Triennial Review and Assurance Review Office (ARO) assessments.

The hierarchical process described herein is consistent with the Principles and Functions of the DOE's Integrated Safety Management System (ISMS) initiative.

## I. Introduction

This document describes the Laboratory's ES&H review processes, including the compliance assessment process, from the contractual level to individual employee level. ES&H compliance is defined as adherence to Laboratory ES&H policies. Most of these policies are listed in *The Environment, Safety, and Health Program at the Lawrence Livermore National Laboratory*, the *Health and Safety Manual* and the *Environmental Compliance Manual* (References 1, 2, and 3). The Laboratory ES&H review process comprises the self-assessment processes and steps shown in Figure 1. The intent of this hierarchical process is to assess the status of compliance of the Laboratory's operations, facilities, and activities with Laboratory and regulatory policies.

A well developed self-assessment process has two major goals: to improve Laboratory ES&H performance and to enhance the confidence of Laboratory management, customer (DOE), and stake holders that the Laboratory is adequately protecting employees, the public, and the environment.

Self-assessment is an essential element of the DOE ISMS initiative "Do work safely." This objective is guided by seven key principles and five basic functions (see Attachment). While all parts of this system should be assessed periodically, one function—Feedback/Improvement—is synonymous with an effective self-assessment process.

The DOE Oversight initiative utilizes LLNL's self-assessment as the primary source of information for their oversight evaluation. The information from an effective LLNL self-assessment process should meet DOE's requirements for oversight and promote identification and resolution of ES&H concerns, with resulting savings for both the Laboratory and DOE.

Section II of this document briefly describes the Laboratory's Compliance Assessments Program. Section III describes the ES&H organizations' program reviews. Section IV describes the general nature of the assessment levels in the hierarchy. Section V discusses key questions that are considered at each level to determine completeness and quality of the process. Many of these questions can be directly linked to the ISMS concepts. At each level of the hierarchy these questions address scope and intent; roles and competencies of staff; and criteria, plans, actions and documentation. Section VI is a brief summary of the ES&H Compliance Assessment Process at LLNL.

Many of the assessments at different levels (Figure 1) are further interlinked by management processes, e.g., ES&H Program reviews and committee activities. A description of LLNL's ES&H Program and many of the management processes for evaluating the quality and effectiveness of the program are outlined in Reference 1, *The Environment, Safety, and Health Program at the Lawrence Livermore National Laboratory*.



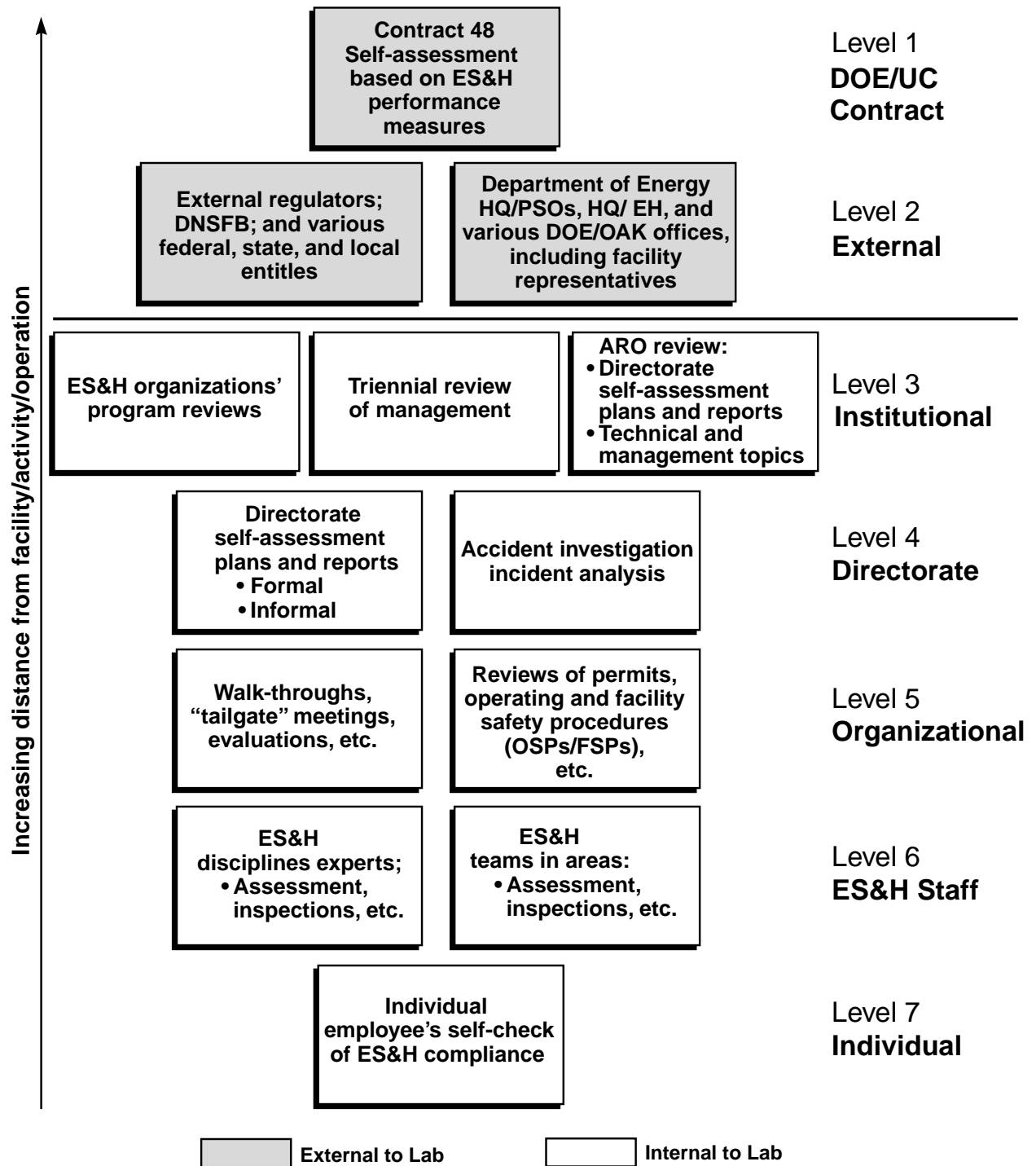


Figure 1. ES&amp;H assessment hierarchy.

## II. Compliance Assessment Program

The Laboratory pursues the objective of an efficient and effective process by using all available information in the assessment process. Duplication of assessments, audits, or evaluations is avoided to the extent possible by utilizing the results of all assessments performed by qualified persons or groups, from inside and outside the Laboratory.

The nature of the assessments changes from the bottom of the assessment hierarchy to the top. At the bottom, the assessor is close to the work and assessments are frequent but of limited scope and formality. As the hierarchy is ascended, an assessor is further from the work, and assessments become less frequent but more formal. The various assessments result in the development and accumulation of different types of feedback. Management's use of all the feedback provides for an efficient process.

**Responsibilities:** Line organizations are responsible for performing assessments. Each associate director is responsible for developing a Directorate ES&H Self-Assessment Plan that details formal assessments to be carried out within the directorate. Each directorate summarizes the results of its formal assessments in an annual report.

Line organizations may conduct the assessment themselves, "contract" with ES&H support organizations to obtain the required ES&H technical expertise, or hire outside ES&H professionals to perform regular and special assessments.

The ES&H support organizations are responsible for ensuring that their staffs are knowledgeable of Laboratory ES&H policy requirements.

The disciplines within the ES&H organizations also have institutional responsibilities for providing assessment services to the Laboratory. The Fire Safety Division's assessment of fire fighting systems is an example of an institutional responsibility carried out by an ES&H organization.

**Flexibility and Formality:** Flexibility is essential in maintaining the effectiveness and efficiency of the process given the diversity of LLNL operations, activities, and facilities. Assessments are subject to a graded approach to provide flexibility in meeting organizational needs. Criteria are provided for formal assessments at the directorate level. These criteria are indicated in the *Health & Safety Manual* Supplement 2.04, "Environment, Safety, and Health Directorate Self-Assessment Program" (Reference 4). Criteria formality at this level helps ensure that assessments done across the Laboratory have a common basis on which to make cross-directorate comparisons.

The Assurance Review Office prepares a self-assessment Focus Areas List as part of the *Health and Safety Manual* Supplement 2.04 process. The Focus Areas List is a guide to the topical areas that should be addressed by each

directorate in its self-assessment plan. The list is reviewed and approved annually by the ES&H Working Group.

Qualifications: Appropriate training and experience are required for individuals conducting assessments at each level. At the base of the hierarchy, the individual worker is expected to be knowledgeable of the ES&H aspects of his or her own work. Ascending the hierarchy, more technical or management-system training and experience are expected. At the top of the hierarchy, every associate director has an assurance manager and staff with relevant ES&H training to perform his or her assessments or to obtain the required expertise from other sources.

Documentation: A level of documentation commensurate with the formality of the assessment being performed is encouraged at all assessment levels. At the directorate level, a formal plan and an annual report are required. The annual report summarizes the results of formal ES&H assessments and analysis and trending of the results; it may also include results of informal assessments conducted within the directorate.

DefTrack, a computerized database, is a management and staff aid used to record and track the results from formal assessments, external assessments, and other sources. This database contains over 300 "Codes" that allow findings to be assigned to categories. The categories facilitate trending and analysis of information. (See Reference 5 for a complete list of codes.)

### **III. ES&H Organizations' Program Reviews**

The quality of the ES&H organizations<sup>\*</sup> are critical to the Laboratory's success in fulfilling its mission. To be effective in their support role, the ES&H departments and offices must be effectively managed and appropriately staffed and funded. The Deputy Director for Operations (DDO) is responsible for conducting periodic program reviews of these organizations. These program reviews are of two types: line management and peer reviews. In practice the two types of reviews may be combined. In line-management reviews, Department Heads/Office Managers, the Plant Manager, the Associate DDO, and/or the DDO review the management, staffing, funding, and technical direction of the organizations. In peer reviews, technical experts from outside the Laboratory are invited into the Laboratory to review the organizations' technical direction and compare it with other DOE and commercial organizations. The ES&H organizations' program reviews are used to validate that the Laboratory's ES&H support organizations are technically capable and effective in their responsibilities.

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<sup>\*</sup> Hazards Control Department, the Environmental Protection Department, the Health Services Department, and the Quality Assurance Support Office

The compliance assessments and program reviews require different approaches. The differences are reflected in Table 1.

**Table 1. Comparison of self-assessments and ES&H program reviews.**

	<b>Self-assessment (S-A)</b>	<b>ES&amp;H Organizations' Program Reviews</b>
<b>Assessment Objectives</b>	Assess compliance of operations, facilities, and activities with ES&H policies aimed at protecting people and the environment.	Evaluate ES&H organizations' programs, goals, operations, activities, and facilities for adequacy, effectiveness, and quality.
<b>Scope</b>	Assess to documented ES&H requirements (e.g., policies and procedures) and best management practices (BMPs).	Evaluate organization, structure, costs, quality of service, documentation, responsiveness and performance including ES&H results.
<b>Formality of Processes</b>	Formal evaluation processes are planned and structured. They generally require use of technical specialists and/or special training  Informal processes are similar to formal processes, but less structured.	Formal evaluation processes and techniques take multiple forms, e.g.: technical and management (sr. mgt., ES&H WG, line mgt.) peer reviews; customer, program, and design reviews; QA, S-A, regulatory, oversight (UC and DOE), and institutional evaluations.  Continuous informal application of management principles are essential to day-to-day operations.
<b>Timeliness</b>	Assessments are periodic, a "snapshot in time," whether done informally or formally	Formal program evaluations are also periodic. Informal evaluation is continuous.

## **IV. Assessment Hierarchy**

The assessment hierarchy depicted in Figure 2 provides a framework to understand and relate each of the elements of the Laboratory's assessment program. Each level has its own responsibility, focus, and methods. Interactions among the levels also occur but are not shown on the diagram. In this section the features of each of the elements are discussed.

Assessments at the different levels are intended to be complementary, not redundant. Each level has a slightly different focus—e.g., individual practices, technical requirements, management of requirements, and oversight of requirements. Higher level oversight assessments may involve a review of lower levels. This may result in some duplication of review, but duplication is intended to be avoided whenever possible.

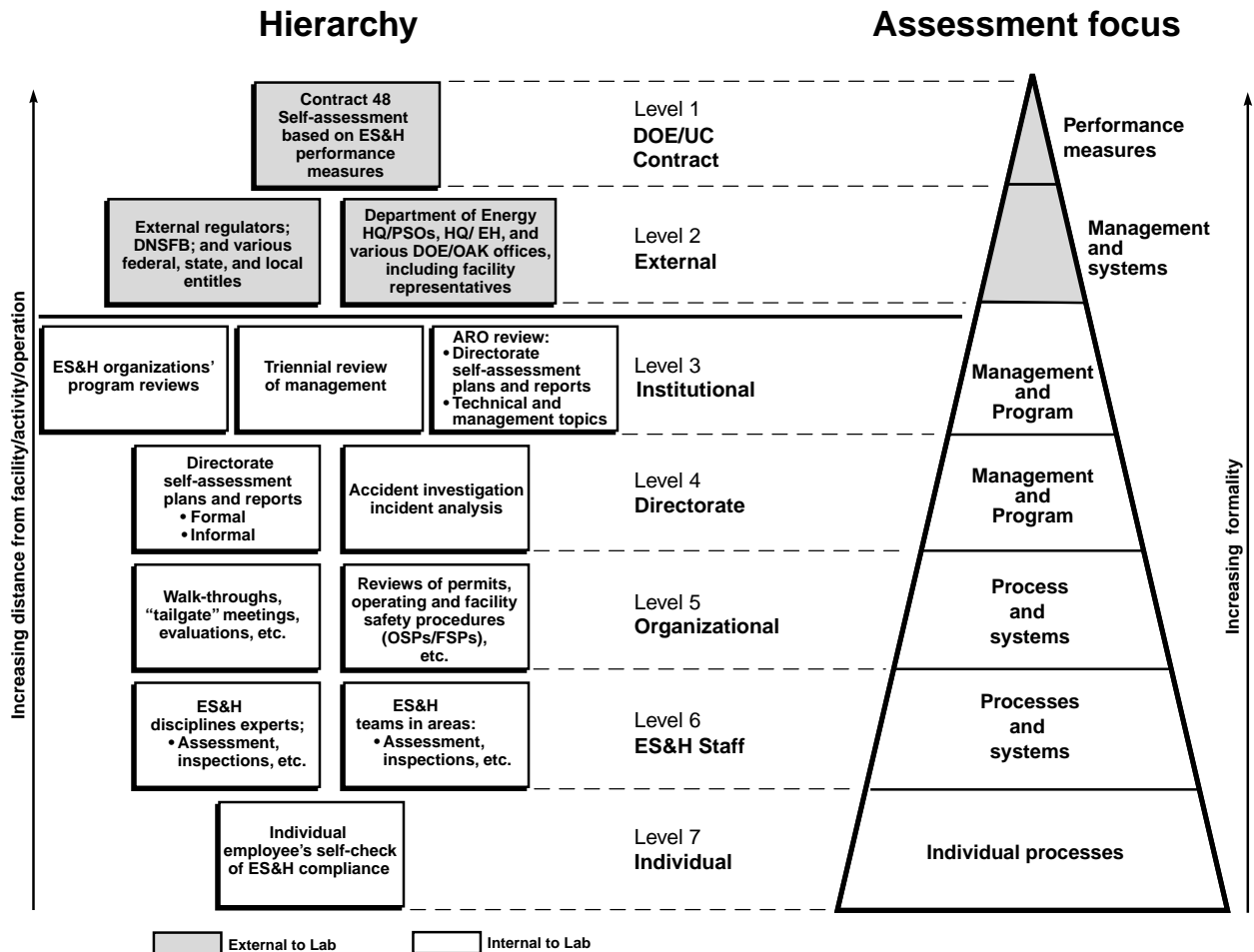
The comprehensiveness, frequency, and formality of assessments are left to the judgment of each directorate's management. Comprehensiveness and frequency are based upon the risks being assessed. Formality is necessary in some instances to assure validity of the process and to foster appropriate cultures. If indicators such as poor safety or regulatory statistics or poor assessment results suggest general ES&H problems, then increasing the comprehensiveness, frequency, and/or formality of assessments is viewed as an appropriate way to improve the culture and ultimately the results.

The number of individual assessment activities is greatest at the lower levels and least at the upper levels of the hierarchy. Typically, those managing or working in a facility, operation or activity have the best and most timely knowledge of ES&H issues and are in the best position to assess ES&H elements on a routine basis. Assessments at higher levels are broader in scope and typically include management processes as well as the information from lower level assessments.

Assessment Level 1 evolved as a result of the 1992 Contract 48. Enhanced external regulation (Level 2) began in earnest in the late 1980s. Levels 3 and 4 were expanded and formalized as a result of DOE's Tiger Team findings, but had been ongoing for many years. Levels 5, 6, and 7 have been practiced since shortly after the Laboratory was formed, evolving over time.

An orderly discussion of the hierarchy starts at the bottom since higher levels of the hierarchy frequently represent a "roll-up" from below. Some levels are relatively standard across the Laboratory, e.g., Levels 1, 4, and 6, while others are driven by the nature of the work, e.g., Levels 2 and 7. Levels 3 and 5 are a mixture.

Background information, descriptions of the assessment activities, and the purposes of these activities are briefly provided below.



**Figure 2. ES&H assessment hierarchy and focus.**

### Level 7: Individual

Employees, working with their supervisors, are expected to assess their compliance with training, documented requirements, and safe work practices on a routine basis. Every employee is authorized and obligated to stop work that he or she considers unsafe. If employees have concerns or questions, they are expected to seek answers from their supervisors or ES&H experts. These individual assessments are aimed at both developing an ES&H culture and protecting the worker, fellow employees, the public, and the environment.

Each individual is expected to (1) be aware of general Laboratory ES&H policies and procedures; (2) follow the safety and operating procedures affecting their work; and (3) be sufficiently knowledgeable of risks in his or her work place to protect him- or herself, coworkers, the public, and the environment. Training is provided to each new employee to develop this base knowledge. Additional training is provided as required by the discipline

and/or assignment. Mandatory training is described in Reference 6, *LLNL Training Program Manual*, and in various facility and operations safety procedures (e.g., Facility Safety Procedures [FSPs], Operational Safety Procedures [OSPs], and Safety Analysis Reports [SARs]).

Each LLNL employee has ES&H responsibilities, and his or her ES&H performance is formally evaluated as part of his or her annual performance review. These are described in Reference 1.

### **Level 6: ES&H Staff**

The purpose of the assessment at this level is to control and reduce ES&H incidents using the most knowledgeable staff. These subject matter experts have dual roles: to conduct assessments of ES&H activities and to provide technical support to their customers.

ES&H teams are assigned to support specific directorates, programs, locations and/or activities. These teams develop ES&H Team Action Plans (TAPs) that are tailored to the identified hazards for facilities and operations. The Plans generally span the set of all applicable ES&H topics and specify the conduct of assessments in the work areas. Assessment frequency is hazard-level dependent.

The ES&H team leaders develop TAPs based on an analysis of Discipline Action Plans (DAPs). DAPs are developed by all the discipline members supporting the team. The TAP is a collection of applicable routine ES&H assessment services the team delivers to a program area or facility. The list of topics and the suggested frequency of assessments are contained in Reference 7, *Hazards Control Manual*, Section 3.04, "Discipline Action Plans/Team Action Plans."

Discipline experts from the ES&H organizations also participate in a variety of other assessment activities. Some of these activities are specified in the DAPs and others are contained in separate documents. Some of these assessment activities are performed for the institution. Assessment activities on behalf of the responsible program or directorate may also be performed by the ES&H team safety discipline experts in the work areas that they support.

Team members conduct the bulk of the lower level assessments. They frequently have advanced degrees in ES&H-related disciplines and obtain extensive training in a broad cross section of ES&H-related topics; many participate in national standards-setting activities. When an issue arises that is outside their training or experience, team members contact the appropriate environment, safety, or health professional.

The team and discipline assessment processes are intended to prevent problems or at a minimum identify issues at an early enough stage so that they can be corrected without incident. Each team and discipline member is expected to resolve ES&H issues at the lowest appropriate level in the line

organization. The objective is immediate corrective action by local line staff. Team members working with line staff provide de facto on-the-job-training (OJT) training to the staff.

### **Level 5: Organizational**

At this level there are formal and informal assessments. Each directorate participates in the formal assessment process defined in the *Health and Safety Manual* Supplement 2.04 (Reference 4). Reviews of ES&H activities required by Laboratory policies and best management practices are also conducted. Laboratory policies mandate compliance with the requirements specified in the *Health and Safety Manual* and the *Environmental Compliance Manual* (References 2 and 3). ES&H professionals also provide guidance when new or undocumented situations occur. Examples include reviews of OSPs, FSPs, and SARs; readiness reviews; and design reviews. There are about 175 FSPs and 400 OSPs for Laboratory facilities and operations. Protocol and criteria are documented for these formal activities in the referenced manuals.

By policy ES&H documents are reviewed periodically. OSPs are reviewed at least once per year, and FSPs are reviewed at least every three years. In each case ES&H experts are a part of the process, and in most cases protocol requires ES&H team sign-off in addition to that of the responsible line person.

The purpose of these formal assessments is to assure appropriate planning and implementation of the five ISMS functions—Define Scope of Work, Analyze the Hazards, Develop/Implement (Hazard) Controls, Perform Work, and Provide Feedback/Improvement. This is particularly so with respect to the higher hazard/risk activities.

Most organizations conduct informal assessments of their activities. These assessments range from daily walk-throughs and regular “tailgate meetings” to detailed “check lists” of specific functions.

The purpose of informal assessments is to foster a positive ES&H culture in addition to ensuring that the Laboratory’s ES&H policies are being appropriately implemented. These informal assessments are typically initiated by management but may be initiated and executed by staff.

### **Level 4: Directorate**

The objectives of the ES&H Self-Assessment Program are to ensure that:

- Laboratory directorates comply with applicable ES&H-related LLNL policies and procedures.
- ES&H-related requirements are integrated into all levels of facility, management, and operational activities.
- ES&H-related deficiencies are identified and analyzed in a timely manner and managed in order to minimize their occurrence or recurrence.



All assessments at and below this level (i.e., Levels 5, 6, and 7) are the responsibility of the directorates, i.e., the responsible associate directors. The Assurance Offices provide oversight of the formal and informal assessments within their directorate. The minimum formal assessment criteria are specified in Reference 4. However, assessments may go beyond the minimum assessment criteria. The formal requirements include but are not limited to:

- Developing directorate-level (Level 4) formal self-assessment plans and assuring implementation.
- Preparing annually a directorate-level formal assessment report that includes review and assessment of tracked deficiency data.

The formal process is used to conduct assessments across the directorates. These assessments are tailored to each directorate's facilities, modes of operation, and hazards. The assessments are expected to be sufficiently complete to ensure that Laboratory policies are met in the entire directorate.

Informal assessments take place at the directorate office and/or lower levels depending upon the structure and preference of the directorate. These informal assessments are not a part of the formal plan, but the results of these activities are often included in the formal report.

### **Level 3: Institutional**

The Deputy Director for Operations, utilizing the Assurance Review Office (ARO), has the primary institutional evaluation and assessment responsibility for the Laboratory. The roles, responsibilities, and authorities of the ARO are specified in Reference 1. Among other elements, the ARO assesses:

- Directorate-level (Level 4) formal assessment plans and annual reports to determine conformance to the policies as specified in Reference 2.
- Management and ES&H topics. The ARO does selected vertical and horizontal “slice” assessments of management and ES&H topics. Topics are selected based on the ARO’s charter and a variety of sources, including DefTrack data, observations, external findings, and management input.

The purpose of the ARO assessments is to evaluate the adequacy of the existing ES&H system and its implementation relative to the Lab's policies and procedures and applicable ES&H laws, regulations, and directives.

The Director triennially sponsors an independent review of the Laboratory’s ES&H internal review system in order to obtain an independent assessment. This review is conducted by experienced managers from private and/or federally funded organizations and is focused on management issues. This review constitutes the highest level of Laboratory management assessment.

## **Level 2: External**

The purpose of external regulatory assessments is to evaluate the Laboratory's compliance with regulatory standards and requirements.

External regulators are a significant part of the assessment process. External regulators have been heavily involved in environmental areas since the 1980s. More recently Defense Nuclear Facilities Safety Board (DNFSB) staff members have become active assessors of the LLNL's nuclear facilities.

DOE assessments are conducted by Headquarters/Program Secretarial Offices (HQ/PSOs), Headquarters/Environmental Health Office (HQ/EH), various DOE Oakland Office (OAK) programs and ES&H offices, and DOE/OAK's facility representatives.

DOE assessments evaluate the Laboratory's compliance to DOE standards and requirements. DOE assessors have historically used DOE Orders, Directives, Manuals, and Guides as their basic criteria for evaluation. DOE more recently has used LLNL Implementation Plans as assessment criteria.

## **Level 1: UC/DOE Contract**

At the highest level, the DOE/UC Contract, Appendix F, contains Performance Objectives, Criteria, and Measures (POCMs) (see Reference 7). These have been developed in partnership by DOE/OAK, UC, LBNL, and LLNL. Appendix F and the POCMs are used to assess LLNL's performance and to encourage improvement. There are approximately twenty ES&H Performance Measures (PMs) in the Contract (see Reference 8). By agreement, these are to be indicators of ES&H performance and are not all-inclusive. The PMs are assessed each year by LLNL and are reviewed and "graded" by UC and then by DOE. The Laboratory's Directorate ES&H Assurance Managers coordinate the Laboratory's information and response to the PMs. The majority of the PMs are indicators relative to the performance of line activities.

## **V. Assessment Hierarchy and the ISMS**

At each hierarchy level, several questions are addressed to assure the completeness and quality of the assessment process. These questions and how they link to the ISMS are presented below.

Question 1: What are the scope, intent, and expected results of the assessment process? (ISMS function: Define Scope of Work—i.e., plan the work, set expectations, and set priorities for conducting the assessment)

Question 2: What line managers or staff involved at this level? (ISMS Principle 1: Line Management Responsibility for Safety)

Question 3: Are roles, responsibilities and authorities clear? (ISMS Principle 2: Clear Roles and Responsibilities)

Question 4: Are there criteria and/or requirements for the assessment activity? (ISMS Principles 4, 5, and 6, and/or best management practices [BMPs])

Question 5: Are written plans and/or check lists needed to conduct the assessment at this level?

Question 6: Are the assessors competent to do the intended assessment? (ISMS Principle 3: Competence Commensurate with Responsibilities)

Question 7: What are the actual versus expected/planned assessment activities? (ISMS Function: Perform Work)

Question 8: Are the findings/observations being reviewed and acted upon? (ISMS Function: Feedback/Improvement)

Question 9: Are the results documented? Although this question is related to Question 8, some minimum level of documentation may be required in order to effectively answer other questions and to provide verification to upper management and customers (e.g., DOE) that the assessment was conducted.

Brief answers to the nine questions for each level are presented in Table 2.

**Table 2. Summary answers by level to nine key questions (Levels 1, 2, 3, 4).**

	<b>Level 1: Contract</b>	<b>Level 2: Regulator/DOE</b>	<b>Level 3: Institutional</b>	<b>Level 4: Directorate</b>
Q1: What are the scope, intent and expected results of the assessment at this level?	The Contract includes a select few integrated measures mutually agreed upon by DOE/ UC /LLNL. The intent is to use these measures to monitor general performance. Improvements in selected areas are expected.	The intent is to evaluate the Laboratory's overall compliance to regulatory and DOE standards and requirements. Full compliance is expected.	The ARO conducts vertical and horizontal assessments of selected topics. The intent is to conduct reviews across LLNL and to evaluate LLNL's assessment and ES&H programs. These assessments are expected to provide adequate institutional oversight.	Directorate Office staff formally assess implementation of relevant ES&H policies across the entire directorate. Documented criteria are followed. The intent is to assess and review activities across the entire directorate, taking into account the unique directorate operations and hazards. Meeting the documented criteria is expected.
Q2: Are line managers or staff involved at this level?	Directorate assurance managers coordinate the Lab information and responses.	Both line managers and ES&H experts are involved.	Activities are reported to the Director's office. Directorate assurance managers provide the inputs.	The assurance manager, reporting to the associate director, coordinates and/or leads the activity.
Q3: Are roles, responsibilities and authorities clear?	Responsibilities jointly agreed to by DOE and UC are documented. (See Ref. 7)	N/A	Responsibilities are documented and are part of the contract for outside experts. (See Ref. 1)	Responsibilities are documented in Refs. 1 and 2. Others may be specified by the associate director.
Q4: Are there criteria and/or requirements for the assessment activity?	General requirements are agreed to by DOE and UC. Criteria for specific performance objectives are part of the Contract.	Criteria are dictated by statutes and related documents.	Criteria are specified LLNL documents, DOE directives and national standards.	Minimum criteria are specified in Ref. 2.

**Table 2. Summary answers by level to nine key questions (Levels 5, 6, 7).**

	Level 5: Organizations	Level 6: Teams & Disciplines	Level 7: Individual
Q1	Management and staff formally and informally assess plans and implementation to ES&H policies, particularly for higher risk/hazard activities. The intent is to foster a positive ES&H culture and to evaluate policy and the implementation of appropriate best management practices (BMPs).	ES&H team and discipline experts assess all relevant aspects of ES&H in the work areas. The intent is to control and reduce incidences by using the most knowledgeable individuals in the work areas to find problems early and help the line staff correct them. Experts are expected to provide ES&H support to the line.	Employees assess themselves and their work environment to be sure they are knowledgeable of general policies and procedures and the specific requirements for their assignments and work location. The intent is to perform work safely. Employees are expected to work safely and to stop work believed to be unsafe and to seek guidance from supervisors and ES&H team members when necessary.
Q2	Line managers initiate the actions and fund ES&H experts who provide support and guidance.	Line managers fund the teams and disciplines and are responsible for corrective actions.	Line managers provide guidance and funds for training and oversee employee commitments.
Q3	Responsibilities are documented for specific requirements (See Refs. 1 and 2). BMPs are determined by the managers.	Responsibilities are documented (see Ref. 1). In addition to support, ES&H experts are the gatekeepers of ES&H requirements .	Individual responsibilities have been documented (See Ref. 1). ES&H is part of the performance appraisal process.
Q4	Specific criteria are indicated in Refs. 2 and 3. General policy criteria are specified in Refs. 1 and 2.	Criteria are documented in Ref. 6. Assessment frequency is established by the ES&H experts based on the hazards. Criteria cover the full scope of ES&H.	Criteria are specified in general policies and in specific assignment-related training.

**Table 2. Summary answers by level to nine key questions (Levels 1, 2, 3, 4).**

	Level 1: Contract	Level 2: Regulator/DOE	Level 3: Institutional	Level 4: Directorate
Q5: Are plans needed to conduct the assessment at this level?	Plans are agreed to by DOE, UC, and LLNL.	N/A	The ARO develops an annual assessment plan. There is a plan for each assessment.	A formal assessment plan is required.
Q6: Are the assessors competent to do the intended assessment?	UC and LLNL senior managers	N/A	Assessors are senior managers, technical ES&H staff, and/or outside experts well trained and/or educated in specific ES&H disciplines.	Assessors are senior managers supported by Lab ES&H experts or outside experts.
Q7: What are the actual versus expected or planned assessment activities?	Performance results are assessed per the contractual requirements.	N/A	Completion of the planned assessments is the primary measure.	Expected formal assessment results are specified in Ref. 2. These S-A reports are reviewed by the ARO.
Q8: Are the findings/ observations being reviewed and acted upon?	Reviews by DOE and UC are required under the Contract.	Findings and observations that are provided to the Laboratory are acted upon by the line and entered into a tracking system.	This is part of the ARO process. Findings and observations are provided to the line for action and entered into a tracking system.	Specific findings are entered into a tracking system per policy.
Q9: Are the results documented?	Quarterly and annual assessment reports are documented.	Assessment results are documented by the regulator and/or DOE according to applicable laws.	Assessment findings are documented in reports for the cognizant directorate and institutional managers.	An annual report is required. The content of the report is described in Ref. 2.

**Table 2. Summary answers by level to nine key questions (Levels 5, 6, 7).**

	Level 5: Organizations	Level 6: Teams & Disciplines	Level 7: Individual
Q5	Planned requirements are specified in Ref. 2. There are no planning requirements for BMPs.	Team and discipline action plans are developed for the Institution and work areas.	Specific plans are required for some assignments.
Q6	Varies by activity. Required assessments specify who is to participate, including the ES&H experts needed for the process.	Team technicians have extensive, broad ES&H training. Discipline experts have formal degrees, and most are certified in their discipline.	Each individual receives general training and specific training required for the assignment and/or work area.
Q7	Policies outlined in Ref. 2 specify expected formal assessment results. The results of informal assessments are not specified.	100% of all mandated assessments and a goal of 70% of the BMP assessments specified in team or discipline action plans are expected.	Higher level assessments generally reflect the activities at the individual level.
Q8	LLNL policy requires the periodic review of findings and observations recorded in DefTrack. Other assessments review the effectiveness of responses to findings and observations.	Team and discipline members work findings and observations at the lowest level within the line and take immediate corrective actions where feasible. Significant issues, trends, etc., are communicated through team-discipline, team-line, and other regular meetings.	Individuals are expected to act upon findings and observations. These are generally reflected in the higher level assessments.
Q9	Formal assessments are documented by the very nature of the process. Informal assessments may not be documented.	Informal assessments may be documented in team or discipline logbooks or the appropriate database.	There is no formal documentation process.

## **VI. Summary**

The objective of the Laboratory's ES&H review processes is to assure the Laboratory works safely—i.e., that employees, the public, and the environment are protected and that institutional, contractual, and regulatory requirements are met. An extensive program is in place to achieve this objective.

Over the years the Laboratory has developed hierarchical assessment processes. These processes emphasize ES&H compliance details at the lower levels and management-system evaluations at the higher levels.

Most of the processes have been in place for many years, but a more formal assessment process at the directorate level and other refinements have been introduced since 1990.

Each level of the Laboratory's hierarchy review meets many of the tenets of the DOE Integrated Safety Management System initiative, and the overall process addresses the key ISMS function, Feedback/Improvement.

## **Acknowledgments**

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## **Attachment**

### **DOE Draft Integrated Safety Management System Principles and Functions**

#### **Guiding Principles**

Line management responsibility for safety.

Clear roles and responsibilities

Competence commensurate with responsibilities

Balanced priorities

Identification of safety standards and requirements

Hazard controls tailored to work being performed

Operations authorization

#### **Core Functions**

Define scope of work

Identify and analyze hazards associated with the work

Develop and implement hazard controls

Perform work within controls

Provide feedback on adequacy of controls and continuous improvements in  
defining and planning work